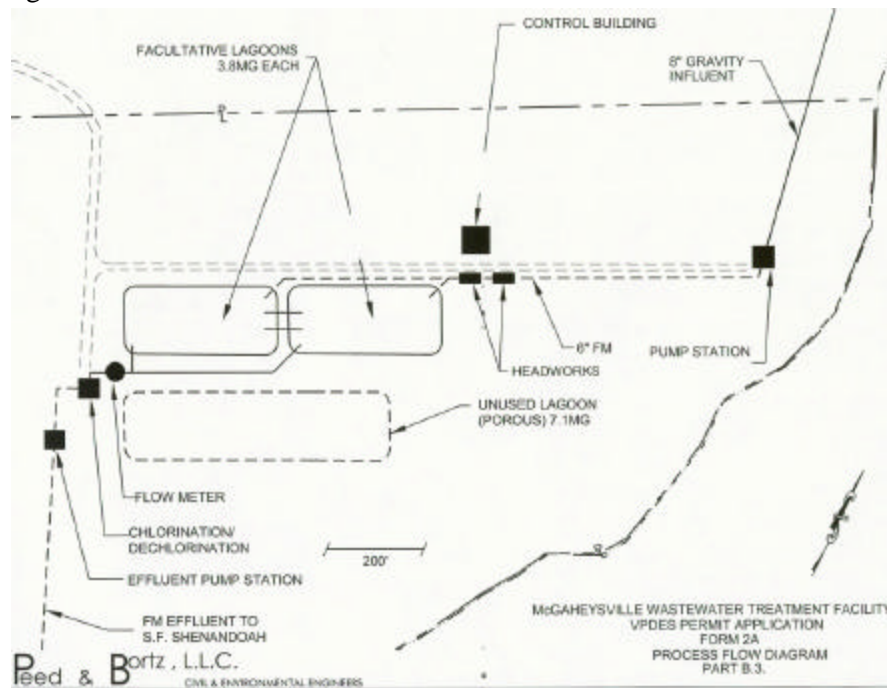


VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor, Municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9 VAC 25-260. The proposed discharge will result from the operation of a municipal sewage treatment plant (SIC Code: 4952 - Sewerage Systems). This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Address:
McGaheysville STP
County of Rockingham
PO Box 1252
Harrisonburg, VA 22803
Location: 9782 Cave Hill Road, McGaheysville, VA 22840
2. Permit No. VA0072931; Expiration Date: November 30, 2011
3. Owner: County of Rockingham
Contact Name: Mr. Barry Hertzler
Title: Director of Public Works
Telephone No: 540.564.3020
4. Description of Treatment Works Treating Domestic Sewage:
Total Number of Outfalls – 1

McGaheysville STP is an aerated facultative lagoon treatment system. The system is comprised of a mechanical bar screen, two 3.8 MG lagoons each with fine bubble diffused aeration and a baffled quiescent zone, effluent chlorination/dechlorination, and effluent pumping. The facility primarily receives domestic sewage generated by residents in the McGaheysville area of Rockingham County. The treatment facilities are depicted in the process flow diagram below. This facility has not discharged since April 2010. All wastewater is being directed to North River WWTF.



Average Discharge Flow (May 2009 – April 2010) = 0.22 MGD (no discharge since April 2010)
Design Average Flow = 0.187 MGD

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

5. Application Complete Date: June 21, 2011

Permit Writer: Eric Millard
Reviewed By: Bev Carver
Dawn Jeffries

Date: August 25, 2011
Date:
Date:

Public Comment Period: _____ to _____

6. Receiving Stream Name: South Fork Shenandoah River

River Mile: 93.17

Use Impairment: Yes

Special Standards: pH

Tidal Waters: No

Watershed Name: VAV – B35 South Fork Shenandoah River/Elk Run/Boone Run

Basin: Potomac; Subbasin: Shenandoah

Section: 3; Class: IV

7. Operator License Requirements per 9 VAC 25-31-200.C: Class III

8. Reliability Class per 9 VAC 25-790: Class II (assigned December 12, 1986)

9. Permit Characterization:

☐ Private ☐ Federal ☐ State ☒ POTW ☐ PVOTW
☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

10. Discharge Location Description and Receiving Waters Information: Appendix A

11. Antidegradation (AD) Review & Comments per 9 VAC 25-260-30:

Tier Designation: North River: Tier 1

The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

The AD review begins with a Tier determination. The South Fork Shenandoah River downstream of the facility discharge location is determined to be Tier 1 because the stream does not meet the General Standard (Benthics) for aquatic life use. AD baselines are not calculated for Tier 1 waters.

12. Site Inspection: Performed by Lisa Kelly on March 9, 2009

13. Effluent Screening and Effluent Limitations: Appendix B

14. Whole Effluent Toxicity (WET) Program Requirements per 9 VAC 25-31-220.D: N/A

15. Sewage sludge utilization and disposal options include the following:

- transport of dewatered sewage sludge to the Rockingham County Landfill

16. Bases for Special Conditions: Appendix C

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

17. Material Storage per 9 VAC 25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.
18. Antibacksliding Review per 9 VAC 25-31-220.L: This permit complies with Antibacksliding provisions of the VPDES Permit Regulation.
19. Impaired Use Status Evaluation per 9 VAC 25-31-220.D: The South Fork Shenandoah River in the vicinity of the discharge is listed as impaired for bacteria, mercury and as not meeting the General Standard (Benthics) for aquatic life use. A TMDL addressing the bacteria impairment includes the following WLA for this discharge:
- E. coli: 8.69×10^{11} cfu/yr (based on a design flow of 0.499 MGD and a concentration of 126 cfu/100 mL)
- A TMDL addressing the benthic impairment has not been prepared. The permit contains a re-opener condition that may allow the permit limits to be modified, in compliance with section 303(d)(4) of the Act once a TMDL is approved.
20. Regulation of Users per 9 VAC 25-31-280.B.9: N/A – This facility is owned by a municipality.
21. Storm Water Management per 9 VAC 25-31-120: Application Required? ☐ Yes ☒ No
22. Compliance Schedule per 9 VAC 25-31-250: There are no compliance schedules included in the reissued permit.
23. Variances/Alternative Limits or Conditions per 9 VAC 25-31-280.B, 100.J, 100.P, and 100.M: The applicant requested a waiver for sampling TRC, Ammonia-N, DO, TKN, Nitrate plus Nitrite, O&G, TP, TDS as part of the application and Attachment A monitoring. The waiver request was approved as part of the application.
24. Financial Assurance Applicability per 9 VAC 25: N/A – This facility is owned by a municipality.
25. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this reissuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☒ No
26. Nutrient Trading Regulation per 9 VAC 25-820: See Appendix B
General Permit Required: ☐ Yes ☒ No
27. Threatened and Endangered (T&E) Species Screening per 9 VAC 25-260-20 B.8: In accordance with the VPDES Memorandum of Understanding, T&E screening was coordinated on August 17, 2011 through DCR based upon request. Comments were received from DCR on September 6, 2011 are included in the permit processing file. Comments were considered in the drafting of the permit.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

28. Public Notice Information per 9 VAC 25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Eric Millard at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7813, eric.millard@deq.virginia.gov.

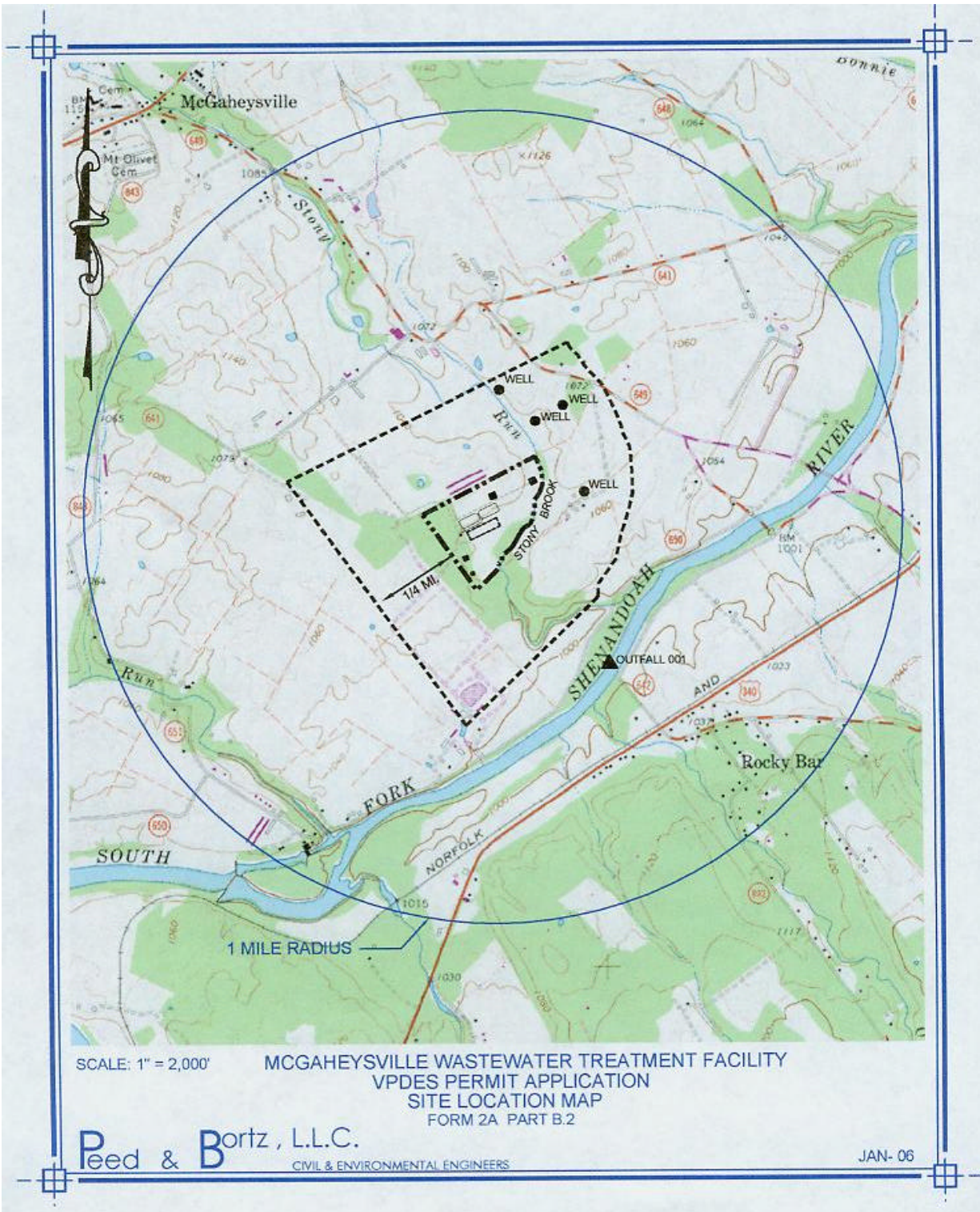
Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

29. Historical Record: The original permit was issued on December 17, 1986 with a design flow of 0.187 MGD. The permit was reissued on December 18, 2006 with a design flow of 0.187 MGD and an expansion flow tier of 0.499 MGD. Beginning in 2010, the permittee ceased discharging from this facility and all wastewater is being sent to North River WWTF for treatment.

APPENDIX A

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

McGaheysville STP discharges to the South Fork Shenandoah River in Rockingham County. The topographic map below shows the location of the treatment facility and Outfall 001.



Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the Water Quality Assessment TMDL Review table and corresponding map below.

WATER QUALITY ASSESSMENTS REVIEW						
POTOMAC-SHENANDOAH RIVER BASIN						
8/9/2011						
IMPAIRED SEGMENTS						
SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER	
B32R-02-HG	South River/NF Shenandoah/SF Shenandoah Rivers	163.27	8.16	155.11	Mercury in Fish Tissue	
B33R-01-BAC	South Fork Shenandoah River	100.97	41.98	58.99	Fecal Coliform	
B33R-01-BEN	South Fork Shenandoah River	100.97	41.98	58.99	Benthic	
B33R-02-PH	Deep Run	4.33	0.00	4.33	pH	
B33R-03-PH	Lower Lewis Run	3.66	0.00	3.66	pH	
B34R-01-BAC	Cub Run	13.88	0.00	13.88	E-coli, Fecal Coliform	
B35R-02-BAC	Quail Run	5.54	0.00	5.54	E-coli, Fecal Coliform	
B35R-02-BEN	Quail Run	4.26	0.00	4.26	Benthic	
B35R-03-BEN	Quail Run	5.54	4.26	1.28	Benthic	
B35R-04-PH	Two Mile Run	4.7	0.00	4.7	pH	
B35R-05-PH	One Mile Run	6.48	0.00	6.48	pH	
PERMITS						
PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0072931	McGaheysville STP	S.F. Shenandoah River	93.17	382055	784225	VAV-B35R
VA0002178	Merck Sharp & Dehome Corp. - Stonewall Plant	S.F. Shenandoah River	88.09	382316	783841	VAV-B35R
VA0024732	Massanutten Public Service STP	Quail Run	5.07	382418	784246	VAV-B35R
VA0026433	Elkton STP	S.F. Shenandoah River	85.07	382437	783807	VAV-B35R
VA0073245	MillerCoors Brewing Co. - Shenandoah Brewery 001	S.F. Shenandoah River	92.38	382120	784143	VAV-B35R
VA0073245	MillerCoors Brewing Co. - Shenandoah Brewery 002	Gap Run X-Trib	0.56	382106	784026	VAV-B35R
MONITORING STATIONS						
STREAM	NAME	RIVER MILE	RECORD	LAT	LONG	
Quail Run	1BQAL004.47	4.47	10/1/96	382418	784200	
Quail Run	1BQAL004.89	4.89	10/1/96	382419	784245	
Quail Run	1BQAL005.09	5.1	10/1/96	382418	784248	
Quail Run	1BQAL005.04	5.04		382419	784244	
S.F. Shenandoah Riv	1BSSF086.12	86.12	5/4/06	382355	783736	
Quail Run	1BQAL004.30	4.3	7/1/97	382418	784200	
Cub Run	1BCBR000.80	0.8	07/01/91	382044	0784359	
Quail Run	1BQAL005.29	5.29	07/01/97	382417	0784303	
S.F. Shenandoah Riv	1BSSF092.46	92.46	07/01/99	382117	0784146	
S.F. Shenandoah Riv	1BSSF093.74	93.74	7/1/99	382032	0784250	
S.F. Shenandoah Riv	1BSSF085.08	85.08	9/23/99	382433	78387.	
S.F. Shenandoah Riv	1BSSF088.20	88.2	3/19/02	382318	0783847	
S.F. Shenandoah Riv	1BSSF092.69	92.69	9/23/99	382112	0784159	
Cub Run	1BCBR000.03	0.03	2/20/02	382024	784326	
Big Run	1BBGR000.42	0.42	7/2001	381957	784305	
Quail Run	1BQAL004.82	4.82				
Quail Run	1BQAL004.96	4.96				
PUBLIC WATER SUPPLY INTAKES						
OWNER	STREAM	RIVER MILE				
None						
WATER QUALITY MANAGEMENT PLANNING REGULATION						
Is this discharge addressed in the WQMP regulation? No						
If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?						
PARAMETER	ALLOCATION					
WATERSHED NAME						
VAV-B35 South Fork Shenandoah River/Elk Run/Boone Run						

McGaheysville STP - Water Quality Assessments Review
August 9, 2011



Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

FLOW FREQUENCY DETERMINATION

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road – P.O. Box 3000

Harrisonburg, VA 22801

SUBJECT: Flow Frequency Determination
McGaheysville STP – VPDES Permit No. VA0072931, Rockingham County

TO: Permit Processing File

FROM: Eric Millard

DATE: August 3, 2011

This memo supersedes Eric Aschenbach's flow frequency determination dated July 31, 2006. The subject facility discharges to the South Fork Shenandoah River near McGaheysville, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit reissuance.

The USGS and VDEQ have operated a continuous record gage on the South Fork Shenandoah River near Lynnwood, VA (#01628500) since 1930. The gage is located approximately four miles upstream of the discharge point. The flow frequencies for the discharge point were determined using a drainage area comparison and do not address any withdrawals, discharges, or springs located between the gage and the discharge point. The flow frequencies are presented below:

South Fork Shenandoah River near Lynnwood, VA (#01628500):

Drainage Area = 1079 mi ²			
1Q30 =	113 cfs	High Flow 1Q10 =	219 cfs
1Q10 =	139 cfs	High Flow 7Q10 =	240 cfs
7Q10 =	147 cfs	High Flow 30Q10 =	285 cfs
30Q10 =	162 cfs	HM =	479 cfs
30Q5 =	188 cfs		

South Fork Shenandoah River at discharge point:

Drainage Area = 1143.63 mi ²			
1Q30 =	77.4 mgd	High Flow 1Q10 =	150 mgd
1Q10 =	95.2 mgd	High Flow 7Q10 =	164 mgd
7Q10 =	101 mgd	High Flow 30Q10 =	195 mgd
30Q10 =	111 mgd	HM =	328 mgd
30Q5 =	129 mgd		

The high flow months are January through May.

Reviewer: JRD 8/3/11

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

EFFLUENT/STREAM MIXING EVALUATION

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

0.187 MGD Annual Mix	0.499 MGD Annual Mix
<p>Effluent Flow = 0.187 MGD Stream 7Q10 = 101 MGD Stream 30Q10 = 111 MGD Stream 1Q10 = 95.2 MGD Stream slope = 0.00124 ft/ft Stream width = 180 ft Bottom scale = 2 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = 1.1912 ft Length = 36446.98 ft Velocity = .7305 ft/sec Residence Time = .5774 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = 1.2608 ft Length = 34742.49 ft Velocity = .7584 ft/sec Residence Time = .5302 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = 1.1495 ft Length = 37555.92 ft Velocity = .7136 ft/sec Residence Time = 14.6185 hours Recommendation: A complete mix assumption is appropriate for this situation providing no more than 6.84% of the 1Q10 is used.</p>	<p>Effluent Flow = 0.499 MGD Stream 7Q10 = 101 MGD Stream 30Q10 = 111 MGD Stream 1Q10 = 95.2 MGD Stream slope = 0.00124 ft/ft Stream width = 180 ft Bottom scale = 2 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = 1.1934 ft Length = 36389.64 ft Velocity = .7314 ft/sec Residence Time = .5758 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = 1.263 ft Length = 34693.32 ft Velocity = .7592 ft/sec Residence Time = .5289 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = 1.1518 ft Length = 37493.72 ft Velocity = .7146 ft/sec Residence Time = 14.5754 hours Recommendation: A complete mix assumption is appropriate for this situation providing no more than 6.86% of the 1Q10 is used.</p>
0.187 MGD Wet Season Mix	0.499 MGD Wet Season Mix
<p>Effluent Flow = 0.187 MGD Stream 7Q10 = 164 MGD Stream 30Q10 = 195 MGD Stream 1Q10 = 150 MGD Stream slope = 0.00124 ft/ft Stream width = 185 ft Bottom scale = 2 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = 1.5689 ft Length = 30528.38 ft Velocity = .8757 ft/sec Residence Time = .4035 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = 1.7417 ft Length = 27948.01 ft Velocity = .9377 ft/sec Residence Time = .345 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = 1.4867 ft Length = 31947.55 ft Velocity = .8453 ft/sec Residence Time = 10.4986 hours Recommendation: A complete mix assumption is appropriate for this situation providing no more than 9.53% of the 1Q10 is used.</p>	<p>Effluent Flow = 0.499 MGD Stream 7Q10 = 164 MGD Stream 30Q10 = 195 MGD Stream 1Q10 = 150 MGD Stream slope = 0.00124 ft/ft Stream width = 185 ft Bottom scale = 2 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = 1.5707 ft Length = 30498.89 ft Velocity = .8763 ft/sec Residence Time = .4028 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = 1.7434 ft Length = 27925.24 ft Velocity = .9383 ft/sec Residence Time = .3445 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = 1.4886 ft Length = 31913.76 ft Velocity = .846 ft/sec Residence Time = 10.4788 hours Recommendation: A complete mix assumption is appropriate for this situation providing no more than 9.54% of the 1Q10 is used.</p>

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

APPENDIX B

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS

A comparison of technology and water quality-based limits was performed and the most stringent limits were selected, as summarized in the table below.

Outfall 001

Final Limits

Design Flow: 0.187 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Avg.		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
-----	-----	Monthly Avg.		Weekly Avg.		-----	-----
BOD ₅	2,3,4	30 mg/L	21 kg/d	45 mg/L	32 kg/d	1/Week	8 HC
TSS	2	30 mg/L	21 kg/d	45 mg/L	32 kg/d	1/Month	8 HC
Effluent Chlorine (TRC)(mg/L)*	3	0.31		0.35		3/Day at 4-hr intervals	Grab
E. coli (N/100 mL) (geometric mean)	3	126		NA		4/Month* or 3 Days/Week** between 10 am to 4 pm	Grab
-----	-----	Minimum		Maximum		-----	-----
pH (S.U.)	3	6.5		9.5		1/Day	Grab
Contact Chlorine (TRC)(mg/L)*	3,5	1.0		NA		3/Day at 4-hr intervals	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

TIRE = Totalizing, Indicating, and Recording equipment

8 HC = 8-Hour Composite

4/Month = 4 samples taken weekly during the calendar month

* = Applicable only when chlorination is used for disinfection

** = Applicable if an alternative to chlorination is used for disinfection.

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9 VAC 25-31)
2. Federal Effluent Requirements (Secondary Treatment Regulation - 40CFR133)
3. Water Quality Standards (9 VAC 25-260)
4. Regional Stream Model
5. Best Professional Judgment (BPJ)

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Outfall 001

Final Limits

Design Flow: 0.499 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Avg.		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
-----	-----	Monthly Avg.		Weekly Avg.		-----	-----
BOD ₅	2,3,4	30 mg/L	57 kg/d	45 mg/L	85 kg/d	3 Days/Week	8 HC
TSS	2	30 mg/L	57 kg/d	45 mg/L	85 kg/d	1/Month	8 HC
Effluent Chlorine (TRC)(mg/L)*	3	0.12		0.14		3/Day at 4-Hr intervals	Grab
E. coli (N/100 mL) (geometric mean)	3,5	126		NA		4/Month* or 3 Days/Week** between 10 am to 4 pm	Grab
-----	-----	Annual Average		Maximum		-----	-----
TP – Year to Date (mg/L)	7	NL		NA		1/Month	Calculated
TP – Calendar Year (mg/L)	7,8	1.0		NA		1/Year	Calculated
TN – Year to Date (mg/L)	7	NL		NA		1/Month	Calculated
TN – Calendar Year (mg/L)	7,8	8.0		NA		1/Year	Calculated
-----	-----	Minimum		Maximum		-----	-----
pH (S.U.)	3	6.5		9.5		1/Day	Grab
Dissolved Oxygen (mg/L)	3,4,6	5.0		NA		1/Day	Grab
Contact Chlorine (TRC)(mg/L)*	3,6	1.0		NA		3/Day at 4-Hr intervals	Grab

NL = No Limitation, monitoring required

TIRE = Totalizing, Indicating, and Recording equipment

4/Month = 4 samples taken weekly during the calendar month

NA = Not Applicable

8 HC = 8-Hour Composite

* = Applicable only when chlorination is used for disinfection

** = Applicable if an alternative to chlorination is used for disinfection.

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9 VAC 25-31)
2. Federal Effluent Requirements (Secondary Treatment Regulation - 40CFR133)
3. Water Quality Standards (9 VAC 25-260)
4. Regional Stream Model
5. SF Shenandoah River Bacteria TMDL Report
6. Best Professional Judgment (BPJ)
7. Guidance Memo No. 07-2008, Amendment No. 2, 10/23/07, Permitting Considerations for Facilities in the Chesapeake Bay Watershed
8. Annual average concentration limits are based on the Technology Regulation (9 VAC 25-40)

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

LIMITING FACTORS – OVERVIEW:

The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (WQMP) (9 VAC 25-720)	
A. TMDL limits	E. coli
B. Non-TMDL WLAs	None
C. CBP (TN & TP) WLAs	TN, TP
Federal Effluent Guidelines	BOD₅, TSS, pH
BPJ/Agency Guidance limits	TRC (contact), DO
Water Quality-based Limits - numeric	BOD₅, DO, TRC (effluent), E. coli, pH
Water Quality-based Limits - narrative	None
Technology-based Limits (9 VAC 25-40-70)	TN, TP
Whole Effluent Toxicity (WET)	N/A
Storm Water Limits	N/A

EVALUATION OF THE EFFLUENT – CONVENTIONAL POLLUTANTS:

The discharge from this facility was previously modeled using the Regional Stream Model v. 4.11. The discharge was remodeled at this reissuance to include updated stream and effluent information, and to revise the model length. The previous model intended to model from Outfall 001 to just prior to the MillerCoors Outfall 001. This distance was 2.18 miles in the previous model. At this reissuance, the stream model uses the corrected distance of 0.79 miles. The following limits were demonstrated to be protective:

	0.187 MGD	0.499 MGD
CBOD ₅ (mg/L)	25	25
TKN (mg/L)	20	16
DO (mg/L)	0	5.0

The Regional Stream Model is located at the end of this appendix.

The Regional Stream Model shows that cBOD₅ limits of 25 mg/L are protective for the discharge. A cBOD₅ limit of 25 mg/L is equivalent to a BOD₅ limit of 30 mg/L. BOD₅ limits have been carried forward from the previous permit. Appropriate loading limits for monthly average and weekly average have also been carried forward from the previous permit.

An evaluation of the facility's records for the previous 3 years indicates that the effluent BOD₅ concentration is averaging 36% of the monthly average limit; therefore, a reduction in monitoring frequency is warranted per Agency guidance – from a frequency of 3 Days/Week to a frequency of 1/Week.

The permit does not include TKN limits at either flow tier. The 0.187 MGD facility is designed for secondary treatment and it is not expected to discharge effluent with TKN concentrations greater than 20 mg/L. The 0.499 MGD expansion facility will require nutrient removal technology to be installed and will treat the effluent to meet an annual concentration limit of 8.0 mg/L TN. The upgraded facility is not expected to discharge TKN concentrations greater than 16 mg/L.

A DO limit of 5.0 mg/L has been applied based on Agency guidance for the 0.499 MGD expansion flow tier. This limit has been carried forward from the previous permit. No DO limit is required for the existing 0.187 MGD flow tier.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

The TSS limits are consistent with the Secondary Treatment Regulation and have been carried forward from the previous permit for both flow tiers.

The pH limits reflect the current WQS for pH in the receiving stream and have been carried forward from the previous permit for both flow tiers.

EVALUATION OF THE EFFLUENT – DISINFECTION:

The TRC disinfection requirements are more stringent than the previous permit. In addition to the minimum TRC contact requirements, E. coli monitoring at a frequency of 4/Month and an associated limit have been included at this reissuance to ensure effective disinfection is achieved for minor facilities who discharge to a bacteria impaired water. If an alternative to chlorination is utilized, E. coli monitoring at a frequency of 3 Days/Week and an associated limit have been included at this reissuance. The E. coli limits are consistent with the TMDL WLA of 8.69×10^{11} cfu/yr (based on a concentration of 126 N/100 mL and the 0.499 MGD expansion flow tier) and are protective of the current WQS for E. coli in the receiving stream.

EVALUATION OF THE EFFLUENT – NUTRIENTS:

In accordance with § 62.1-44.19:14.C.5. of the Code of Virginia, this Significant Discharger has submitted a Registration Statement and DEQ has recognized that they are covered under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9 VAC 25-820-10 *et seq.*). The effective date of coverage is January 1, 2007. Coverage under the General Permit will expire December 31, 2011.

Pursuant to section 62.1-44.19:12 - :19 of the law, Total Nitrogen (TN) and Total Phosphorus (TP) baselines are being established for this facility to represent nutrient discharge allowances as of July 1, 2005. Once established, these baselines will be used as a limiting factor should the facility ever expand or have a significant increase in effluent TN or TP concentrations. The baselines are based on the permitted design capacity of the facility. The permitted design capacity is defined as:

$$\text{Total N or P (lb/yr)} = \text{concentration (mg/L)} \times \text{design flow (mgd)} \times 8.3438 \times 365 \text{ (days/yr)}$$

where

Design flow – as of July 1, 2005, the approved flow was 0.187 MGD

Concentration – the treatment provided as of July 1, 2005 was TN = 18.7 mg/L and TP = 2.5 mg/L (assumed concentrations based on secondary treatment facility)

$$\text{TN} = 18.7 \text{ mg/l} \times 0.187 \text{ mgd} \times 8.3438 \times 365 \text{ days/yr} = 10,650 \text{ lb/yr}$$

$$\text{TP} = 2.5 \text{ mg/l} \times 0.187 \text{ mgd} \times 8.3438 \times 365 \text{ days/yr} = 1,424 \text{ lb/yr}$$

Annual average concentration limits of TN = 8.0 mg/L and TP = 1.0 mg/L have been included required for the 0.499MGD flow tier per the requirements of the Technology Regulation 9 VAC 25-40-70.

At 8.0 mg/L TN and 1.0 mg/L TP, the expansion flow tier loads will be more than the permitted design capacity; therefore, an offset plan requirement has been included in the permit.

EVALUATION OF THE EFFLUENT – TOXICS:

WQS-WLA Spreadsheet Data

Stream: Water quality data for the receiving stream were obtained from Ambient Monitoring Station No. 1BSSF100.10 on the South Fork Shenandoah River located upstream of the discharge point. A Flow Frequency Determination for the receiving stream was generated August 3, 2011, and is included in Appendix A. The “Wet Season” or “High Flow” months are January through May.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Stream Information			
90% Annual Temp (°C) =	24.7	90% pH (SU) =	8.6
90% Wet Temp (°C) =	19.2	10% pH (SU) =	7.7
Mean Hardness (mg/L) =	140		

All toxic pollutants, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data for these parameters directly above the discharge.

Discharge: The pH values were obtained from data submitted by the permittee. Due to the inconsistent nature of effluent temperature data collection by the permittee in the daily operational logs, the temperature values have been carried forward from the previous permit. The hardness values were obtained from DEQ monitoring.

Effluent Information			
90% Annual Temp (°C) =	22.0	90% pH (SU) =	7.8
90% Wet Temp (°C) =	12.0	10% pH (SU) =	7.3
Mean Hardness (mg/L) =	231		

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. Current agency guidelines recommends the evaluation of toxic pollutant limits for TRC and Ammonia-N be based on default effluent concentrations of 20 mg/L and 9 mg/L, respectively. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- TRC: More stringent limits were determined to be necessary at both flow tiers. This change is due to decreased stream receiving stream flows and an increase in the monitoring frequency from 1/Day to 3/Day, as specified by current DEQ Guidance. McGaheysville STP dechlorinates the effluent, and as such, no compliance schedule has been included to meet the more stringent limits.
- The WQS Attachment A monitoring required by the previous permit was not completed because the facility has ceased discharging. If the facility resumes discharging at the 0.187 MGD flow tier, the Attachment A monitoring required by the previous permit must be performed within 1 year of resuming the discharge.
- A complete WQS toxics scan has been required for the 0.499 MGD flow tier. This monitoring must be performed within 1 year of the issuance of the CTO for the 0.499 MGD facility and must be reported using Attachment B of the permit.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

WQC-WLA SPREADSHEET INPUT – 0.187 MGD

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name:

McGaheysville STP

Receiving Stream:

South Fork Shenandoah River

Permit No.: VA0072931

Date: 8/24/2011

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO₃) = 140 mg/L
 90% Temperature (Annual) = 24.7 deg C
 90% Temperature (Wet season) = 19.2 deg C
 90% Maximum pH = 8.6 SU
 10% Maximum pH = 7.7 SU
 Tier Designation = 1
 Public Water Supply (PWS) Y/N? = N
 V(alley) or P(iedmont)? = V
 Trout Present Y/N? = N
 Early Life Stages Present Y/N? = Y

Stream Flows

1Q10 (Annual) = 95.2 MGD
 7Q10 (Annual) = 101 MGD
 30Q10 (Annual) = 111 MGD
 1Q10 (Wet season) = 150 MGD
 30Q10 (Wet season) = 195 MGD
 30Q5 = 129 MGD
 Harmonic Mean = 328 MGD

Mixing Information

Annual - 1Q10 Flow = 6.84 %
 - 7Q10 Flow = 100 %
 - 30Q10 Flow = 100 %
 Wet Season - 1Q10 Flow = 9.53 %
 - 30Q10 Flow = 100 %

Effluent Information

Mean Hardness (as CaCO₃) = 231 mg/L
 90% Temp (Annual) = 22 deg C
 90% Temp (Wet season) = 12 deg C
 90% Maximum pH = 7.8 SU
 10% Maximum pH = 7.3 SU
 Current Discharge Flow = 0.187 MGD
 Discharge Flow for Limit Analysis = 0.187 MGD

Footnotes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
- All flow values are expressed as Million Gallons per Day (MGD).
- Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
- Hardness expressed as mg/l CaCO₃. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO₃.
- "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
- Carcinogen "Y" indicates carcinogenic parameter.
- Ammonia WQSs selected from separate tables, based on pH and temperature.
- Metals measured as Dissolved, unless specified otherwise.
- WLA = Waste Load Allocation (based on standards).
- WLA = Waste Load Allocation (based on standards)
- WLAs are based on mass balances (less background, if data exist).
- Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
- Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
- Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
- Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 0.187 MGD

Facility Name:

McGaheysville STP

Receiving Stream:

South Fork Shenandoah River

Permit No.:

VA0072931

Date:

8/24/2011

WATER QUALITY CRITERIA

0.187 MGD Discharge Flow - Mix per "Mixer"

Human Health

Aquatic Protection

Public Water

Other Surface

Supplies

Waters

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS

0.187 MGD Discharge Flow - Mix per "Mixer"

Aquatic Protection

Human

Acute

Chronic

Health

Toxic Parameter and Form

Carcinogen?

Acute

Chronic

Ammonia-N (Annual)

N

3.0E+00 mg/L 4.8E-01 mg/L

None

None

1.1E+02 mg/L

2.9E+02 mg/L

N/A

Ammonia-N (Wet Season)

N

2.8E+00 mg/L 6.8E-01 mg/L

None

None

2.2E+02 mg/L

7.1E+02 mg/L

N/A

Chlorine, Total Residual

N

1.9E-02 mg/L 1.1E-02 mg/L

None

None

6.8E-01 mg/L

6.0E+00 mg/L

N/A

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

WQC-WLA SPREADSHEET INPUT – 0.499 MGD

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name:

McGaheysville STP

Receiving Stream:

South Fork Shenandoah River

Permit No.: VA0072931

Date: 8/24/2011

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO₃) = 140 mg/L
 90% Temperature (Annual) = 24.7 deg C
 90% Temperature (Wet season) = 19.2 deg C
 90% Maximum pH = 8.6 SU
 10% Maximum pH = 7.7 SU
 Tier Designation = 1
 Public Water Supply (PWS) Y/N? = N
 V(alley) or P(iedmont)? = V
 Trout Present Y/N? = N
 Early Life Stages Present Y/N? = Y

Stream Flows

1Q10 (Annual) = 95.2 MGD
 7Q10 (Annual) = 101 MGD
 30Q10 (Annual) = 111 MGD
 1Q10 (Wet season) = 150 MGD
 30Q10 (Wet season) = 195 MGD
 30Q5 = 129 MGD
 Harmonic Mean = 328 MGD

Mixing Information

Annual - 1Q10 Flow = 6.86 %
 - 7Q10 Flow = 100 %
 - 30Q10 Flow = 100 %
 Wet Season - 1Q10 Flow = 9.54 %
 - 30Q10 Flow = 100 %

Effluent Information

Mean Hardness (as CaCO₃) = 231 mg/L
 90% Temp (Annual) = 22 deg C
 90% Temp (Wet season) = 12 deg C
 90% Maximum pH = 7.8 SU
 10% Maximum pH = 7.3 SU
 Current Discharge Flow = 0.187 MGD
 Discharge Flow for Limit Analysis = 0.499 MGD

Footnotes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
- All flow values are expressed as Million Gallons per Day (MGD).
- Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
- Hardness expressed as mg/l CaCO₃. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO₃.
- "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
- Carcinogen "Y" indicates carcinogenic parameter.
- Ammonia WQSs selected from separate tables, based on pH and temperature.
- Metals measured as Dissolved, unless specified otherwise.
- WLA = Waste Load Allocation (based on standards).
- WLA = Waste Load Allocation (based on standards)
- WLAs are based on mass balances (less background, if data exist).
- Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
- Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
- Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
- Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 0.499 MGD

Facility Name:

McGaheysville STP

Receiving Stream:

South Fork Shenandoah River

Permit No.:

VA0072931

Date:

8/24/2011

POST - EXPANSION WATER QUALITY CRITERIA

0.499 MGD Discharge Flow - Mix per "Mixer"

Human Health

Aquatic Protection

Acute Chronic
 3.5E+00 mg/L 4.9E-01 mg/L
 3.0E+00 mg/L 6.9E-01 mg/L
 1.9E-02 mg/L 1.1E-02 mg/L

Public Water

Supplies
 None
 None
 None

Other Surface

Waters
 None
 None
 None

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS

0.499 MGD Discharge Flow - Mix per "Mixer"

Aquatic Protection

Acute Chronic
 4.9E+01 mg/L 1.1E+02 mg/L
 9.0E+01 mg/L 2.7E+02 mg/L
 2.7E-01 mg/L 2.2E+00 mg/L

Human

Health
 N/A
 N/A
 N/A

Toxic Parameter and Form

Ammonia-N (Annual)
 Ammonia-N (Wet Season)
 Chlorine, Total Residual

Carcinogen?

N
 N
 N

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

PROTOCOL FOR THE EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic Waste Load Allocations (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health Waste Load Allocations (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh} , the WLA_{hh} was imposed as the limit. Since there are no data available immediately upstream of this discharge, all other upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or $<$ the required Quantification Level (QL), and at least one detection level is $=$ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are $>$ the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. If the evaluation indicates that limits are needed, but the metals data are reported as a form other than "Dissolved", then the existing data set is inadequate to make a determination and additional monitoring is required.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

TOXLARGE – 0.187 MGD Flow Tier

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	Previously evaluated, no further monitoring required	--	--
Arsenic, dissolved	7440-38-2	1.0	Previously evaluated, no further monitoring required	--	--
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	--	--
Cadmium, dissolved	7440-43-9	0.3	Previously evaluated, no further monitoring required	--	--
Chromium III, dissolved	16065-83-1	0.5	Previously evaluated, no further monitoring required	--	--
Chromium VI, dissolved	18540-29-9	0.5	Previously evaluated, no further monitoring required	--	--
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	--	--
Copper, dissolved	7440-50-8	0.5	Previously evaluated, no further monitoring required	--	--
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	--	--
Lead, dissolved	7439-92-1	0.5	Previously evaluated, no further monitoring required	--	--
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	--	--
Mercury, dissolved	7439-97-6	1.0	Previously evaluated, no further monitoring required	--	--
Nickel, dissolved	7440-02-0	0.5	Previously evaluated, no further monitoring required	--	--
Selenium, total recoverable	7782-49-2	2.0	Previously evaluated, no further monitoring required	--	--
Silver, dissolved	7440-22-4	0.2	Previously evaluated, no further monitoring required	--	--
Thallium, dissolved	7440-28-0	---	No data provided; needs to be sampled	--	--
Zinc, dissolved	7440-66-6	2.0	Previously evaluated, no further monitoring required	--	--
PESTICIDES/PCBS					
Aldrin ^C	309-00-2	0.05	Previously evaluated, no further monitoring required	--	--
Chlordane ^C	57-74-9	0.2	Previously evaluated, no further monitoring required	--	--
Chlorpyrifos	2921-88-2	---	Previously evaluated, no further monitoring required	--	--
DDD ^C	72-54-8	0.1	Previously evaluated, no further monitoring required	--	--
DDE ^C	72-55-9	0.1	Previously evaluated, no further monitoring required	--	--
DDT ^C	50-29-3	0.1	Previously evaluated, no further monitoring required	--	--
Demeton	8065-48-3	---	Previously evaluated, no further monitoring required	--	--
Diazinon	333-41-5	---	No data provided; needs to be sampled	--	--
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	--	--
Dieldrin ^C	60-57-1	0.1	Previously evaluated, no further monitoring required	--	--
Alpha-Endosulfan	959-98-8	0.1	Previously evaluated, no further monitoring required	--	--
Beta-Endosulfan	33213-65-9	0.1	Previously evaluated, no further monitoring required	--	--
Alpha-Endosulfan + Beta-Endosulfan		---	Previously evaluated, no further monitoring required	--	--
Endosulfan Sulfate	1031-07-8	0.1	Previously evaluated, no further monitoring required	--	--
Endrin	72-20-8	0.1	Previously evaluated, no further monitoring required	--	--
Endrin Aldehyde	7421-93-4	---	No data provided; needs to be sampled	--	--
Guthion	86-50-0	---	Previously evaluated, no further monitoring required	--	--
Heptachlor ^C	76-44-8	0.05	Previously evaluated, no further monitoring required	--	--
Heptachlor Epoxide ^C	1024-57-3	---	No data provided; needs to be sampled	--	--
Hexachlorocyclohexane Alpha-BHC ^C	319-84-6	---	No data provided; needs to be sampled	--	--
Hexachlorocyclohexane Beta-BHC ^C	319-85-7	---	No data provided; needs to be sampled	--	--
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	No data provided; needs to be sampled	--	--

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Kepone	143-50-0	---	Previously evaluated, no further monitoring required	--	--
Malathion	121-75-5	---	Previously evaluated, no further monitoring required	--	--
Methoxychlor	72-43-5	---	Previously evaluated, no further monitoring required	--	--
Mirex	2385-85-5	---	Previously evaluated, no further monitoring required	--	--
Parathion	56-38-2	---	Previously evaluated, no further monitoring required	--	--
PCB Total ^C	1336-36-3	7.0	Previously evaluated, no further monitoring required	--	--
Toxaphene ^C	8001-35-2	5.0	Previously evaluated, no further monitoring required	--	--
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	Previously evaluated, no further monitoring required	--	--
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	Previously evaluated, no further monitoring required	--	--
Anthracene	120-12-7	10.0	Previously evaluated, no further monitoring required	--	--
Benzidine ^C	92-87-5	---	No data provided; needs to be sampled	--	--
Benzo (a) anthracene ^C	56-55-3	10.0	Previously evaluated, no further monitoring required	--	--
Benzo (b) fluoranthene ^C	205-99-2	10.0	Previously evaluated, no further monitoring required	--	--
Benzo (k) fluoranthene ^C	207-08-9	10.0	Previously evaluated, no further monitoring required	--	--
Benzo (a) pyrene ^C	50-32-8	10.0	Previously evaluated, no further monitoring required	--	--
Bis 2-Chloroethyl Ether ^C	111-44-4	---	No data provided; needs to be sampled	--	--
Bis 2-Chloroisopropyl Ether	108-60-1	---	No data provided; needs to be sampled	--	--
Bis-2-Ethylhexyl Phthalate ^C	117-81-7	10.0	No data provided; needs to be sampled	--	--
Butyl benzyl phthalate	85-68-7	10.0	Previously evaluated, no further monitoring required	--	--
2-Chloronaphthalene	91-58-7	---	No data provided; needs to be sampled	--	--
Chrysene ^C	218-01-9	10.0	Previously evaluated, no further monitoring required	--	--
Dibenz(a,h)anthracene ^C	53-70-3	20.0	Previously evaluated, no further monitoring required	--	--
1,2-Dichlorobenzene	95-50-1	10.0	Previously evaluated, no further monitoring required	--	--
1,3-Dichlorobenzene	541-73-1	10.0	Previously evaluated, no further monitoring required	--	--
1,4-Dichlorobenzene	106-46-7	10.0	Previously evaluated, no further monitoring required	--	--
3,3-Dichlorobenzidine ^C	91-94-1	---	No data provided; needs to be sampled	--	--
Diethyl phthalate	84-66-2	10.0	Previously evaluated, no further monitoring required	--	--
Dimethyl phthalate	131-11-3	---	No data provided; needs to be sampled	--	--
Di-n-Butyl Phthalate	84-74-2	10.0	Previously evaluated, no further monitoring required	--	--
2,4-Dinitrotoluene	121-14-2	10.0	No data provided; needs to be sampled	--	--
1,2-Diphenylhydrazine ^C	122-66-7	---	No data provided; needs to be sampled	--	--
Fluoranthene	206-44-0	10.0	Previously evaluated, no further monitoring required	--	--
Fluorene	86-73-7	10.0	Previously evaluated, no further monitoring required	--	--
Hexachlorobenzene ^C	118-74-1	---	No data provided; needs to be sampled	--	--
Hexachlorobutadiene ^C	87-68-3	---	No data provided; needs to be sampled	--	--
Hexachlorocyclopentadiene	77-47-4	---	No data provided; needs to be sampled	--	--
Hexachloroethane ^C	67-72-1	---	No data provided; needs to be sampled	--	--
Indeno(1,2,3-cd)pyrene ^C	193-39-5	20.0	Previously evaluated, no further monitoring required	--	--
Isophorone ^C	78-59-1	10.0	Previously evaluated, no further monitoring required	--	--
Nitrobenzene	98-95-3	10.0	Previously evaluated, no further monitoring required	--	--
N-Nitrosodimethylamine ^C	62-75-9	---	No data provided; needs to be sampled	--	--

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
N-Nitrosodi-n-propylamine ^C	621-64-7	---	No data provided; needs to be sampled	--	--
N-Nitrosodiphenylamine ^C	86-30-6	---	No data provided; needs to be sampled	--	--
Pyrene	129-00-0	10.0	Previously evaluated, no further monitoring required	--	--
1,2,4-Trichlorobenzene	120-82-1	10.0	Previously evaluated, no further monitoring required	--	--
VOLATILES					
Acrolein	107-02-8	---	No data provided; needs to be sampled	--	--
Acrylonitrile ^C	107-13-1	---	No data provided; needs to be sampled	--	--
Benzene ^C	71-43-2	10.0	Previously evaluated, no further monitoring required	--	--
Bromoform ^C	75-25-2	10.0	Previously evaluated, no further monitoring required	--	--
Carbon Tetrachloride ^C	56-23-5	10.0	Previously evaluated, no further monitoring required	--	--
Chlorobenzene	108-90-7	50.0	Previously evaluated, no further monitoring required	--	--
Chlorodibromomethane ^C	124-48-1	10.0	Previously evaluated, no further monitoring required	--	--
Chloroform	67-66-3	10.0	Previously evaluated, no further monitoring required	--	--
Dichlorobromomethane ^C	75-27-4	10.0	Previously evaluated, no further monitoring required	--	--
1,2-Dichloroethane ^C	107-06-2	10.0	Previously evaluated, no further monitoring required	--	--
1,1-Dichloroethylene	75-35-4	10.0	Previously evaluated, no further monitoring required	--	--
1,2-trans-dichloroethylene	156-60-5	---	No data provided; needs to be sampled	--	--
1,2-Dichloropropane ^C	78-87-5	---	No data provided; needs to be sampled	--	--
1,3-Dichloropropene ^C	542-75-6	---	No data provided; needs to be sampled	--	--
Ethylbenzene	100-41-4	10.0	Previously evaluated, no further monitoring required	--	--
Methyl Bromide	74-83-9	---	No data provided; needs to be sampled	--	--
Methylene Chloride ^C	75-09-2	20.0	Previously evaluated, no further monitoring required	--	--
1,1,2,2-Tetrachloroethane ^C	79-34-5	---	No data provided; needs to be sampled	--	--
Tetrachloroethylene	127-18-4	10.0	Previously evaluated, no further monitoring required	--	--
Toluene	10-88-3	10.0	Previously evaluated, no further monitoring required	--	--
1,1,2-Trichloroethane ^C	79-00-5	---	No data provided; needs to be sampled	--	--
Trichloroethylene ^C	79-01-6	10.0	Previously evaluated, no further monitoring required	--	--
Vinyl Chloride ^C	75-01-4	10.0	Previously evaluated, no further monitoring required	--	--
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	Previously evaluated, no further monitoring required	--	--
2,4-Dichlorophenol	120-83-2	10.0	Previously evaluated, no further monitoring required	--	--
2,4-Dimethylphenol	105-67-9	10.0	Previously evaluated, no further monitoring required	--	--
2,4-Dinitrophenol	51-28-5	---	No data provided; needs to be sampled	--	--
2-Methyl-4,6-Dinitrophenol	534-52-1	---	No data provided; needs to be sampled	--	--
Nonylphenol	104-40-51	---	No data provided; needs to be sampled	--	--
Pentachlorophenol ^C	87-86-5	50.0	Previously evaluated, no further monitoring required	--	--
Phenol	108-95-2	10.0	Previously evaluated, no further monitoring required	--	--
2,4,6-Trichlorophenol ^C	88-06-2	10.0	Previously evaluated, no further monitoring required	--	--

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	Default = 9 mg/L	a	C.1
Chloride (mg/L)	16887-00-6	---	Previously evaluated, no further monitoring required	--	--
TRC (mg/L)	7782-50-5	0.1 mg/L	Default = 20 mg/L	a	C.2
Cyanide, Free	57-12-5	10.0	Previously evaluated, no further monitoring required	--	--
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	--	--
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	--	--
Hydrogen Sulfide	7783-06-4	---	Previously evaluated, no further monitoring required	--	--
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	--	--
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	--	--
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	--	--
Hardness (mg/L as CaCO ₃)	471-34-1	---	No data provided; needs to be sampled	--	--

TOXLARGE – 0.499 MGD Flow Tier

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	Default = 9 mg/L	a	C.1
TRC (mg/L)	7782-50-5	0.1 mg/L	Default = 20 mg/L	a	C.2
Monitoring for all other applicable parameters is required within 1 year of the issuance of the CTO for the 0.499 MGD facility.					

"Type" column indicates a category assigned to the referenced substance (see below):

A = Acid Extractable Organic Compounds
 B = Base/Neutral Extractable Organic Compounds
 M = Metals
 p = PCBs
 P = Pesticides
 R = Radionuclides
 V = Volatile Organic Compounds
 X = Miscellaneous Compounds and Parameters

The superscript "C" following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10⁻⁵.

"Source of Data" codes:

a = default effluent concentration

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

STAT.EXE RESULTS – 0.187 MGD Flow Tier:

<p><u>Ammonia-N</u> Chronic averaging period = 30 WLAa = 110 WLAc = 290 Q.L. = 0.2 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics: # observations = 1 Expected Value = 9 Variance = 29.16 C.V. = 0.6 97th percentile daily values = 21.9007 97th percentile 4 day average = 14.9741 97th percentile 30 day average= 10.8544 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 9</p>	<p><u>TRC</u> Chronic averaging period = 4 WLAa = 0.68 WLAc = 6 Q.L. = 0.1 # samples/mo. = 90 # samples/wk. = 21</p> <p>Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.1210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 0.68 Average Weekly Limit = 0.354083323681924 Average Monthly Limit = 0.312686217731788</p> <p>The data are: 20</p>	
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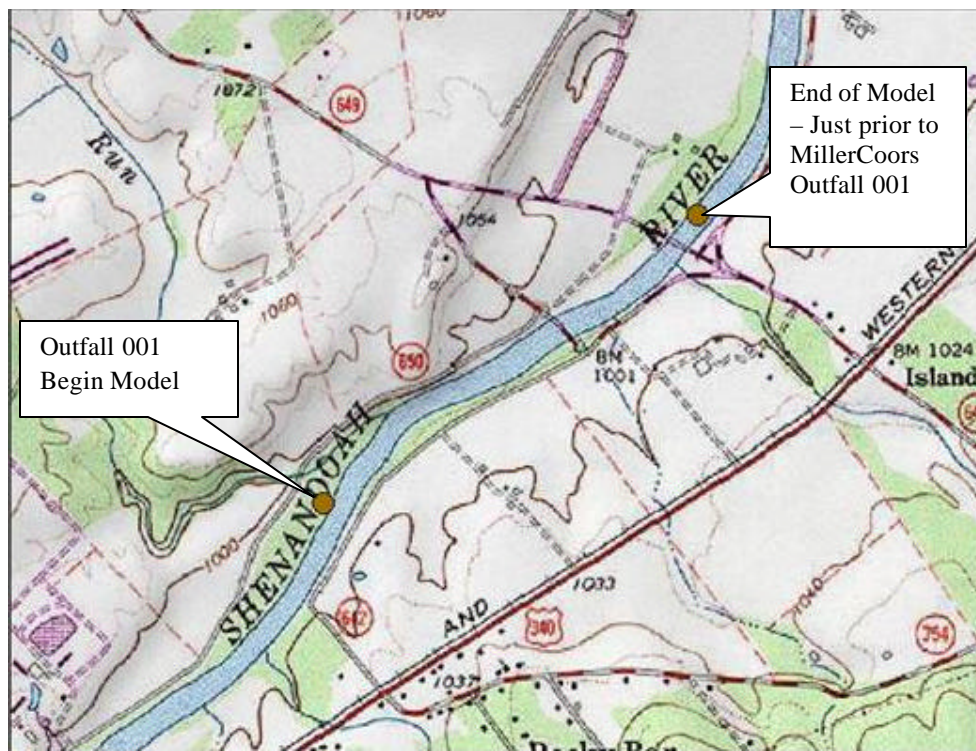
STAT.EXE RESULTS – 0.499 MGD Flow Tier:

<p><u>Ammonia-N</u> Chronic averaging period = 30 WLAa = 49 WLAc = 110 Q.L. = 0.2 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics: # observations = 1 Expected Value = 9 Variance = 29.16 C.V. = 0.6 97th percentile daily values = 21.9007 97th percentile 4 day average = 14.9741 97th percentile 30 day average= 10.8544 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 9</p>	<p><u>TRC</u> Chronic averaging period = 4 WLAa = 0.27 WLAc = 2.2 Q.L. = 0.1 # samples/mo. = 90 # samples/wk. = 21</p> <p>Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.1210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 0.27 Average Weekly Limit = 0.140591907932529 Average Monthly Limit = 0.124154821746445</p> <p>The data are: 20</p>	
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Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Regional Stream Model

Model Segment Map



Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

0.187 MGD MODEL

Model Input

File Information

File Name: U:\WATER PERMITS\DRAFT PERMITS\===
McGAHEYSVILLE STP\FS\Model\Date Modified: September
21, 2011

Water Quality Standards Information

Stream Name: SF SHENANDOAH RIVER
River Basin: Potomac/Shenandoah Rivers Basin
Section: 3
Class: IV - Mountainous Zones Waters
Special Standards: pH

Background Flow Information

Gauge Used: 8/3/11 FFD
Gauge Drainage Area: 1143.63 Sq.Mi.
Gauge 7Q10 Flow: 101 MGD
Headwater Drainage Area: 1143.63 Sq.Mi.
Headwater 7Q10 Flow: 101 MGD (Net; includes
Withdrawals/Discharges)
Withdrawal/Discharges: 0 MGD
Incremental Flow in Segments: 8.831528E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature: 24.7 Degrees C
Background cBOD5: 2 mg/l
Background TKN: 0 mg/l
Background D.O.: 7.279952 mg/l

Model Segmentation

Number of Segments: 1
Model Start Elevation: 980 ft above MSL
Model End Elevation: 979 ft above MSL

Segment Information for Segment 1

Definition Information

Segment Definition: A discharge enters.
Discharge Name: MCGAHEYSVILLE STP
VPDES Permit No.: VA0072931

Discharger Flow Information

Flow: 0.187 MGD
cBOD5: 25 mg/l
TKN: 20 mg/l
D.O.: 0 mg/l
Temperature: 22 Degrees C

Geographic Information

Segment Length: 0.79 miles
Upstream Drainage Area: 1143.63 Sq.Mi.
Downstream Drainage Area: 0 Sq.Mi.
Upstream Elevation: 980 Ft.
Downstream Elevation: 979 Ft.

Hydraulic Information

Segment Width: 180 Ft.
Segment Depth: 1.1912 Ft.
Segment Velocity: 0.7305 Ft./Sec.
Segment Flow: 101.187 MGD
Incremental Flow: -101 MGD (Applied at end of segment.)

Channel Information

Cross Section: Wide Shallow Arc
Character: Moderately Meandering
Pool and Riffle: No
Bottom Type: Sand
Sludge: None
Plants: Heavy
Algae: On Entire Bottom

Model Output

Model is for SF SHENANDOAH RIVER.

Model starts at the MCGAHEYSVILLE STP discharge.

Background Data

7Q10	cBOD5	TKN	DO	Temp
(mgd)	(mg/l)	(mg/l)	(mg/l)	deg C
101	2	0	7.28	24.7

Discharge/Tributary Input Data for Segment 1

Flow	cBOD5	TKN	DO	Temp
(mgd)	(mg/l)	(mg/l)	(mg/l)	deg C
0.187	25	20	0	22

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Hydraulic Information for Segment 1

Length	Width	Depth	Velocity
(mi)	(ft)	(ft)	(ft/sec)
0.79	180	1.1912	0.7305

Initial Mix Values for Segment 1

Flow	DO	cBOD	nBOD	DOSat	Temp
(mgd)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	deg C
101.187	7.266	5.106	0.136	8.09	24.69501

Rate Constants for Segment 1. - (All units Per Day)

k1	k1@T	k2	k2@T	kn	kn@T	BD	BD@T
0.5	0.62	0.759	0.849	0.15	0.215	0	0

Output for Segment 1

Segment starts at MCGAHEYSVILLE STP

Total	Segm.			
Dist.	Dist.	DO	cBOD	nBOD
(mi)	(mi)	(mg/l)	(mg/l)	(mg/l)
0	0	7.266	5.106	0.136
0.1	0.1	7.245	5.08	0.136
0.2	0.2	7.225	5.054	0.136
0.3	0.3	7.205	5.028	0.136
0.4	0.4	7.185	5.002	0.136
0.5	0.5	7.165	5	0.136
0.6	0.6	7.171	5	0.136
0.7	0.7	7.177	5	0.136
0.79	0.79	7.183	5	0.136

END OF FILE

Model Notes: At the end of segment 1, the cBOD_u has reached the background concentration, the DO is recovering and is approaching the background concentration, and further assimilation of the nBOD_u is not occurring. These concentrations do not significantly impact the MillerCoors stream model.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

0.499 MGD MODEL

Model Input

<p>File Information File Name: U:\WATER PERMITS\DRAFT PERMITS\=== McGAHEYSVILLE STP\FS\Model\Date Modified: September 21, 2011</p> <p>Water Quality Standards Information Stream Name: SF SHENANDOAH RIVER River Basin: Potomac/Shenandoah Rivers Basin Section: 3 Class: IV - Mountainous Zones Waters Special Standards: pH</p> <p>Background Flow Information Gauge Used: 8/3/11 FFD Gauge Drainage Area: 1143.63 Sq.Mi. Gauge 7Q10 Flow: 101 MGD Headwater Drainage Area: 1143.63 Sq.Mi. Headwater 7Q10 Flow: 101 MGD (Net; includes Withdrawals/Discharges) Withdrawal/Discharges: 0 MGD Incremental Flow in Segments: 8.831528E-02 MGD/Sq.Mi.</p> <p>Background Water Quality Background Temperature: 24.7 Degrees C Background cBOD5: 2 mg/l Background TKN: 0 mg/l Background D.O.: 7.279952 mg/l</p> <p>Model Segmentation Number of Segments: 1 Model Start Elevation: 980 ft above MSL Model End Elevation: 979 ft above MSL</p>	<p>Segment Information for Segment 1 <u>Definition Information</u> Segment Definition: A discharge enters. Discharge Name: MCGAHEYSVILLE STP VPDES Permit No.: VA0072931</p> <p><u>Discharger Flow Information</u> Flow: 0.499 MGD cBOD5: 25 mg/l TKN: 16 mg/l D.O.: 5 mg/l Temperature: 22 Degrees C</p> <p><u>Geographic Information</u> Segment Length: 0.79 miles Upstream Drainage Area: 1143.63 Sq.Mi. Downstream Drainage Area: 0 Sq.Mi. Upstream Elevation: 980 Ft. Downstream Elevation: 979 Ft.</p> <p><u>Hydraulic Information</u> Segment Width: 180 Ft. Segment Depth: 1.1934 Ft. Segment Velocity: 0.7314 Ft./Sec. Segment Flow: 101.499 MGD Incremental Flow: -101 MGD (Applied at end of segment.)</p> <p><u>Channel Information</u> Cross Section: Wide Shallow Arc Character: Moderately Meandering Pool and Riffle: No Bottom Type: Sand Sludge: None Plants: Heavy Algae: On Entire Bottom</p>
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Model Output

Model is for SF SHENANDOAH RIVER.

Model starts at the MCGAHEYSVILLE STP discharge.

Background Data

7Q10	cBOD5	TKN	DO	Temp
(mgd)	(mg/l)	(mg/l)	(mg/l)	deg C
101	2	0	7.28	24.7

Discharge/Tributary Input Data for Segment 1

Flow	cBOD5	TKN	DO	Temp
(mgd)	(mg/l)	(mg/l)	(mg/l)	deg C
0.499	25	16	5	22

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

Hydraulic Information for Segment 1

Length	Width	Depth	Velocity
(mi)	(ft)	(ft)	(ft/sec)
0.79	180	1.1934	0.7314

Initial Mix Values for Segment 1

Flow	DO	cBOD	nBOD	DOSat	Temp
(mgd)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	deg C
101.499	7.269	5.283	0.277	8.091	24.68673

Rate Constants for Segment 1. - (All units Per Day)

k1	k1@T	k2	k2@T	kn	kn@T	BD	BD@T
0.5	0.62	0.759	0.849	0.15	0.215	0	0

Output for Segment 1

Segment starts at MCGAHEYSVILLE STP

Total	Segm.			
Dist.	Dist.	DO	cBOD	nBOD
(mi)	(mi)	(mg/l)	(mg/l)	(mg/l)
0	0	7.269	5.283	0.277
0.1	0.1	7.247	5.256	0.277
0.2	0.2	7.225	5.229	0.277
0.3	0.3	7.204	5.202	0.277
0.4	0.4	7.183	5.175	0.277
0.5	0.5	7.162	5.148	0.277
0.6	0.6	7.142	5.121	0.277
0.7	0.7	7.122	5.095	0.277
0.79	0.79	7.104	5.071	0.277

END OF FILE

Model Notes: At the end of segment 1, the cBOD_u is approaching the background concentration and further assimilation of the nBOD_u is not occurring. With minimal oxygen demand remaining from the CBOD_u and nBOD_u, the DO would only be expected to decrease another 0.1 mg/L if the model were continued. These concentrations do not significantly impact the MillerCoors stream model.

APPENDIX C

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page	<ul style="list-style-type: none">• Content and format as prescribed by the VPDES Permit Manual.
Part I.A.1.	<p>Effluent Limitations and Monitoring Requirements: <i>Updates Part I.A.1. of the previous permit with the following:</i></p> <ul style="list-style-type: none">• Changes were made to the format and introductory language.• More stringent TRC monthly and weekly average limits were included.• E. coli monitoring and a limit were included in addition to the TRC monitoring.
Part I.A.2.	<p>Effluent Limitations and Monitoring Requirements: <i>Updates Part I.A.2. of the previous permit with the following:</i></p> <ul style="list-style-type: none">• Changes were made to the format and introductory language• More stringent TRC limits were included and monitoring frequency has increased from 1/Day to 3/Day.• E. coli monitoring was included in addition to the TRC monitoring.• Nitrate plus Nitrite, TN, Orthophosphate, and TP monitoring, along with the TN and TP Calendar Year load limits• Footnotes were updated to reflect current DEQ guidance and changes in the reissued permit.
Part I.B.	<p>Additional TRC And E. coli Limitations and Monitoring Requirements: <i>Updates Part I.B. of the previous permit.</i> The chlorine contact requirements were revised. The E. coli monitoring frequency was changed to 3 days/week per DEQ Guidance. Required by Sewage Collection and Treatment (SCAT) Regulations and 9 VAC 25-260-170, Bacteria; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.</p>
Part I.C.	<p>Effluent Limitations and Monitoring Requirements – Additional Instructions: <i>Updates Part I.C. of the previous permit.</i> The paragraph regarding significant digits was revised. Authorized by VPDES Permit Regulation, 9 VAC 25-31-190.J.4 and 220.I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values. Nutrient reporting calculations were updated. §62.1 44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9 VAC 25-820-70. As annual concentrations are limited in the individual permit, this special condition is intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.</p>
Part I.D.	<p>Pretreatment Program Requirements: <i>Updates Part I.D. of the previous permit.</i> VPDES Permit Regulation, 9 VAC 25-31-730 through 900, and 40 CFR part 403 require certain existing and new sources of pollution to meet specified regulations.</p>
Part I.E.1.	<p>95% Capacity Reopener: <i>Identical to Part I.E.1. of the previous permit.</i> Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 4 for certain permits.</p>
Part I.E.2	<p>Indirect Dischargers: <i>Identical to Part I.E.2. of the previous permit.</i> Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 1 for all STPs that receive waste from someone other than the owner of the treatment works.</p>

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

- Part I.E.3. **Materials Handling/Storage:** *Identical to Part I.E.3. of the previous permit.* 9 VAC 25-31-280.B.2. requires that the types and quantities of “wastes, fluids, or pollutants which are ... treated, stored, etc.” be addressed for all permitted facilities.
- Part I.E.4. **O&M Manual Requirement:** *Updates Part I.E.4. of the previous permit.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs. Added requirement to describe procedures for documenting compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts.
- Part I.E.5. **CTC/CTO Requirement:** *Identical to Part I.E.5. of the previous permit.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs.
- Part I.E.6. **SMP Requirement:** *Updates Part I.E.7. of the previous permit.* VPDES Permit Regulation 9 VAC 25-31-100 P, 220 B 2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9 VAC 25-32-10 *et seq.*)
- Part I.E.7. **Licensed Operator Requirement:** *Identical to Part I.E.8. of the previous permit.* The VPDES Permit Regulation 9 VAC 25-31-200 C, the Code of Virginia 54.1-2300 *et seq.*, and Rules and Regulations for Waterworks and Wastewater Works Operators 18 VAC 160-20-10 *et seq.*, require licensure of operators.
- Part I.E.8. **Reliability Class:** *Identical to Part I.E.9. of the previous permit.* Required by SCAT Regulations 9 VAC 25-790.
- Part I.E.9. **Water Quality Criteria Monitoring:** *Updates Part I.E.10. of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility’s effluent for the substances noted in Attachment A and Attachment B of this VPDES permit.
- Part I.E.10. **Treatment Works Closure Plan:** *Updates Part I.E.11. of the previous permit.* Required for all STPs per the State Water Control Law at 62.1-44.18.C. and 62.1-44.15:1.1., and the SCAT Regulations at 9 VAC 25-790-450.E.. and 9 VAC 25-790-120.E.3.
- Part I.E.11. **Reopeners:**
a. *Updates Part I.E.14. of the previous permit:* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.
b. *New Requirement:* 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
c. *Updates Part I.E.12. of the previous permit:* 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
d. *Updates Part I.E.6. of the previous permit:* Required by the VPDES Permit Regulation, 9 VAC 25-31-220.C, for all permits issued to STPs.

Fact Sheet – VPDES Permit No. VA0072931 – McGaheysville STP

- Part I.E.12 **Offset Requirement:** *Updates Part I.E.13. of the previous permit.* The Virginia General Assembly, in its 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.
- Part I.E.13. **Suspension of concentration limits for E3/E4 facilities:** *New requirement.* 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.
- Part II **Conditions Applicable to All VPDES Permits:** *Updates Part II of previous permit.* VPDES Permit Regulation 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed. Part II,A.4. language added for Virginia Environmental Laboratory Accreditation Program (VELAP) per 1 VAC 30, Chapter 45: Certification for Noncommercial Environmental Laboratories, and 1 VAC 30, Chapter 46: Accreditation for Commercial Laboratories.
- Deletions :** None